Photoelectric Piano Music Player DIY Kit

1.Introduction:

It is a Photoelectric Piano Electronic Soldering DIY Kit. It adopts the principle of photosensitive sensor emission and reception, and simulates strings to control and change music through LED simulation. the speaker emits the corresponding scale when the light is blocked, which is very suitable for fun teaching and entertainment.

This DIY electronic product is an intriguing way for users to gain a better understanding of circuits and develop their soldering skills.

2.Feature:

1>.Photoelectric Piano Music Player
2>.Photosensitive Sensor Simulator
3>.Tones do/re/mi/fa/sol/la/si
4>.DIY Hand Electronic Soldering Kit

3.Parameter:

1>.Work Voltage: DC 4.5V-5V
2>.Power Type: USB to DC-005
3>.Work Temperature:-20℃~85℃
4>.Work Humidity:5%~85%RH
5>.Size(Installed):95*72*70mm

4.Component Listing:

NO.	Component Name	PCB Marker	Parameter	QTY
1	STC89C52 Controller	U1	DIP-40	1
2	IC Socket	U1	DIP-40	1
3	Metal Film Resistor	R1,R2,R4-R8	1Kohm	7
4	Metal Film Resistor	R12-R18	4.7Kohm	7
5	Metal Film Resistor	R3,R19	10Kohm	2
6	Carbon Film Resistor	R20	1W 100ohm	1
7	Ceramic Capacitor	C3,C26	22pF	2
8	Electrolytic Capacitor	C1,C2	10uF 25V	2
9	Crystal Oscillator	Y1	12MHz	1
10	S8550 Transistor	Q1	TO-92	1
11	Passive Buzzer	BEL1		1
12	Self-locking Switch	K1	8*8mm	1
13	Red Switch Cap			1
14	Blue LED Vague	D1-D7	3mm	7
15	White LED Transparent	D8-D14	3mm	7
16	GL5516 Photosensitive Sensor			7
17	Heat Shrink Tubing		15cm	1
18	DC-005 Power Socket	DC5V		1
19	USB to DC-005 Power Supply Wire			1
20	Acrylic Board			6
21	Nylon Pillar		M3*10mm	2
22	M3*10mm Screw			4
23	M3*8mm Screw			4
24	M3 Nut			8
25	PCB Circuit Board		89*60*1.6mm	1
Note:Users can complete the installation according to the PCB silk screen and component list.				

6.Application:

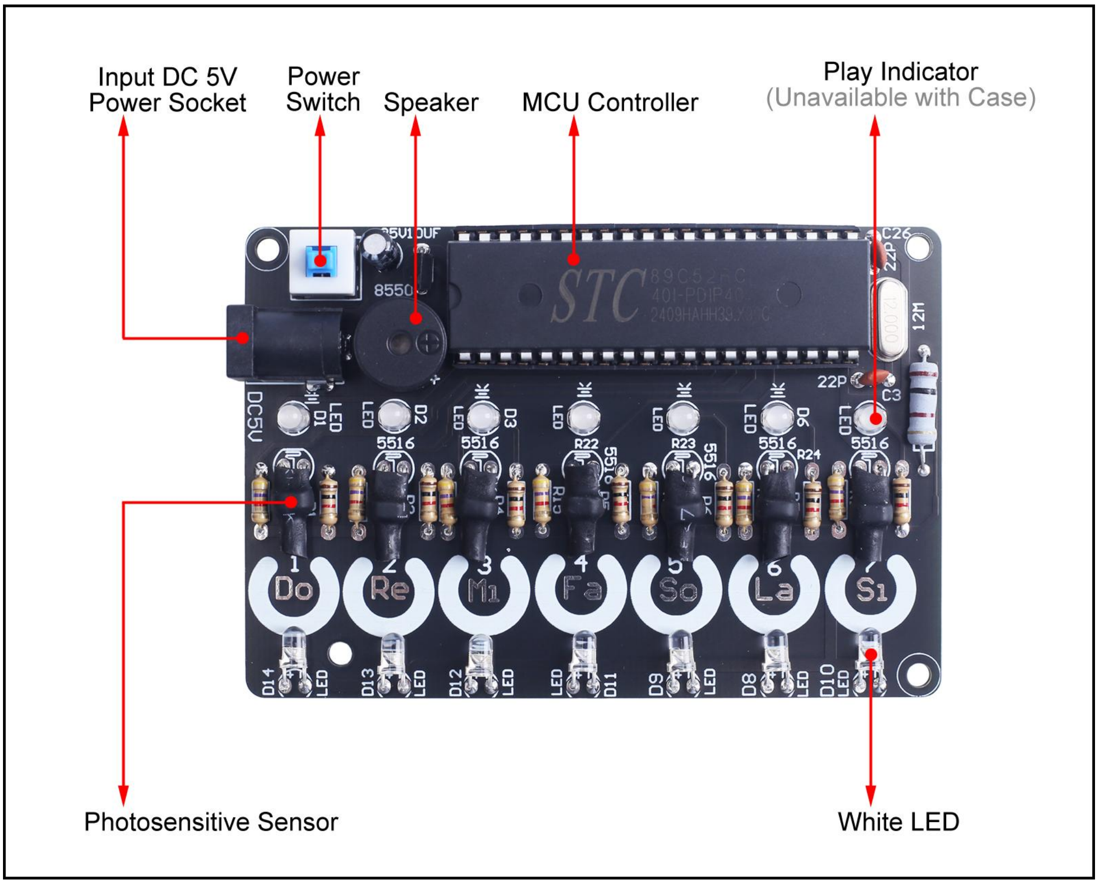
1>.Training welding skills

2>.Student school
3>.DIY production
4>.Project Design
5>.Electronic competition
6>.Gift giving
7>.Crafts collection
8>.Home decoration
9>.Souvenir collection
10>.Graduation design
11>.Holiday gifts

7.Installation Tips:

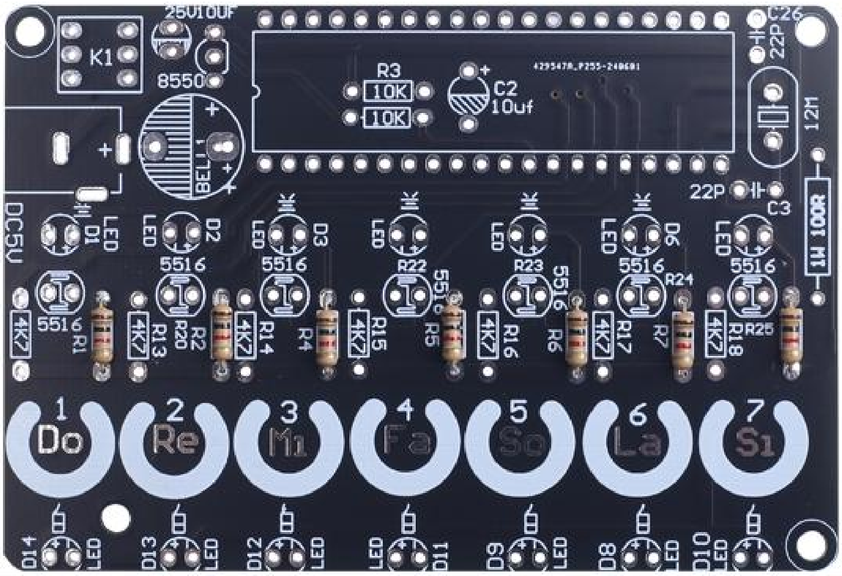
1>.User needs to prepare the welding tool at first.
  1.1>.Soldering iron (<50 Watt)
  1.2>.Rosin core ("radio") solder
  1.3>.Wire cutters
  1.4>.Wire strippers
  1.5>.' + ' screwdriver
2>.Please be patient until the installation is complete.
3>.The package is DIY kit.It need finish install by user.
4>.The soldering iron can't touch components for a long time(1.0), otherwise damage components.
5>.Pay attention to the positive and negative of the components.
6>.Strictly prohibit short circuit.
7>.User must install the LED according to the specified rules.Otherwise some LED will not light.
8>.Install complex components preferentially.
9>.Make sure all components are in right direction and right place.
10>.It is strongly recommended to read the installation manual before starting installation!!!
11>.Please wear anti-static gloves or anti-static wristbands when installing electronic components.

8.Installation Steps(Please be patient install!!!):



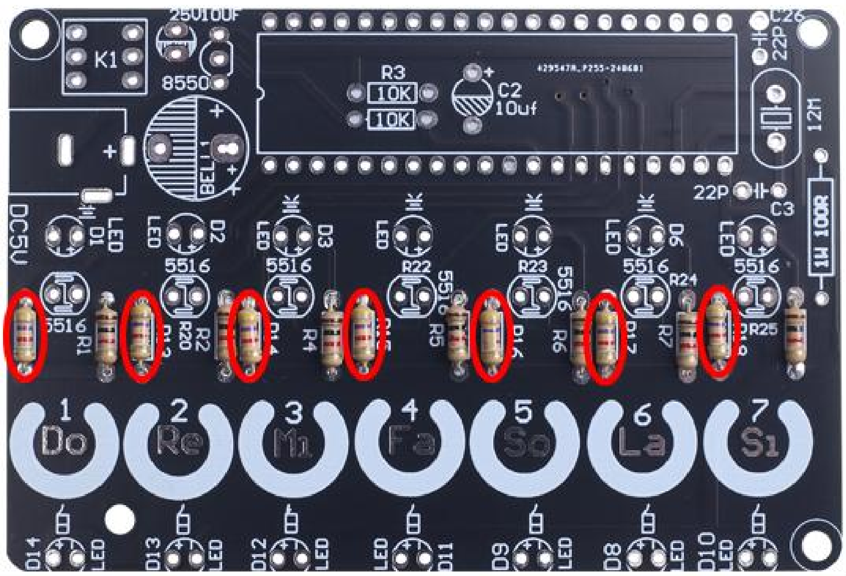
Step 1: Install 7pcs 1Kohm Metal Film Resistor at R1,R2,R4-R8.





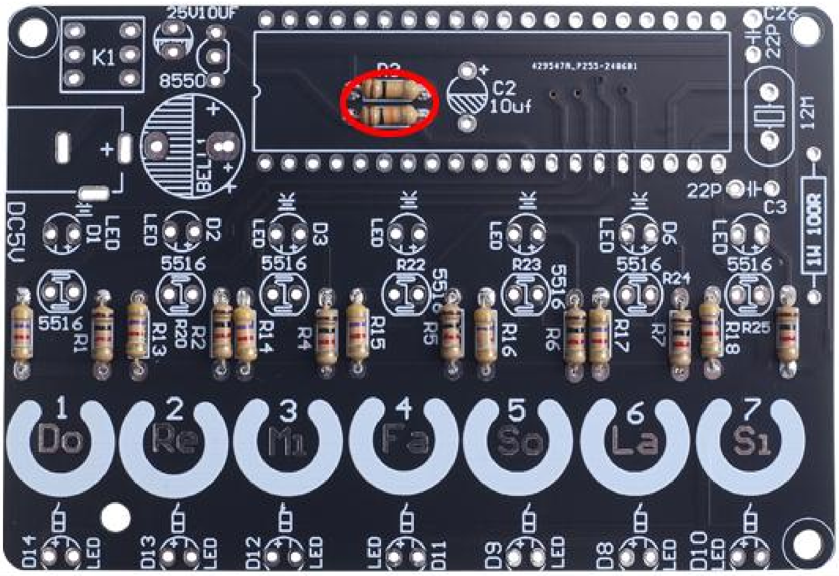
Step 2: Install 7pcs 4.7Kohm Metal Film Resistor at R12-R18.





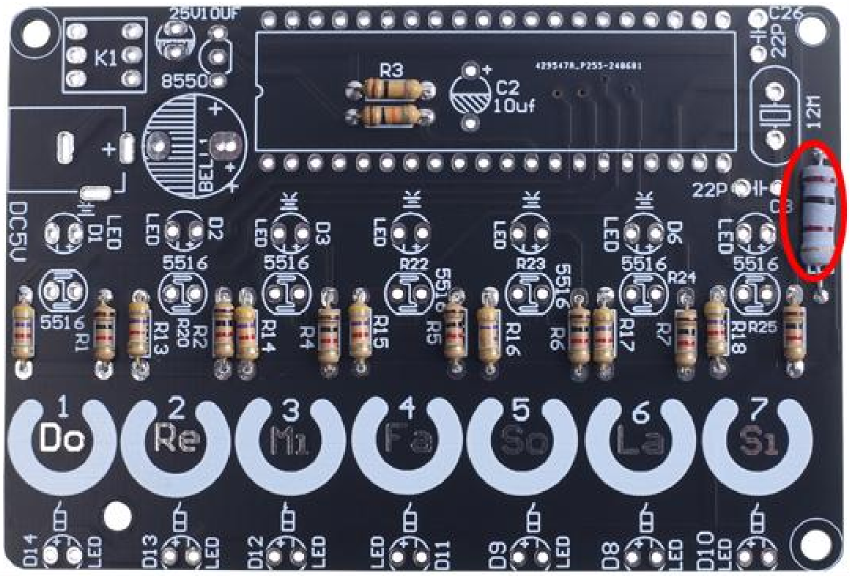
Step 3: Install 2pcs 10Kohm Metal Film Resistor at R3,R26.



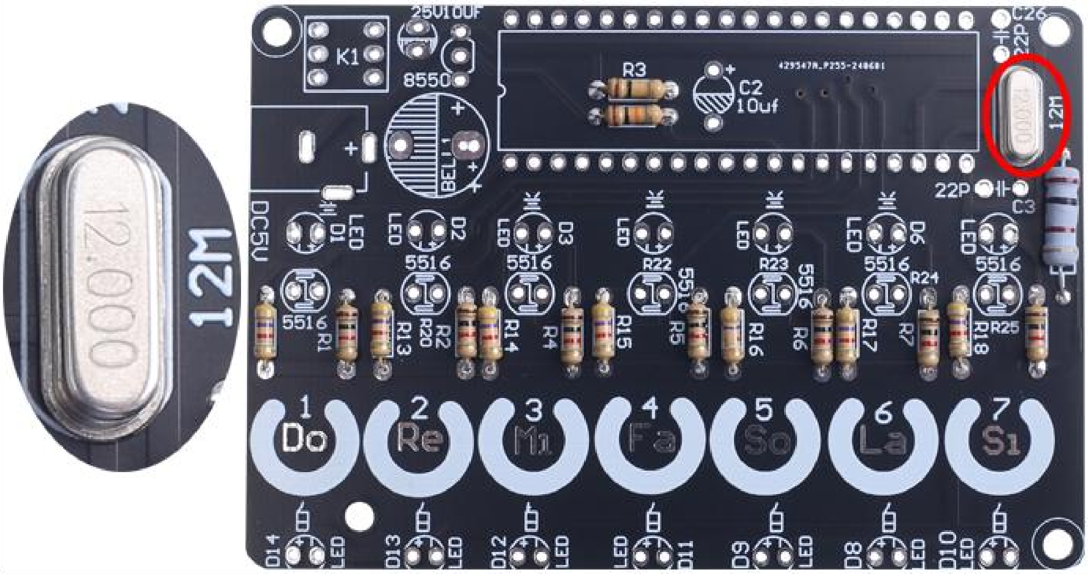


Step 4: Install 1pcs 1W 100ohm Carbon Film Resistor at R27.





Step 5: Install 1pcs 12MHz Crystal Oscillator at Y1.



Step 6: Identify the positive(anode) and negative(cathode) lead of LED.The leads of the LED must be installed correctly, otherwise the LED cannot be turned on.Here are four methods as following:

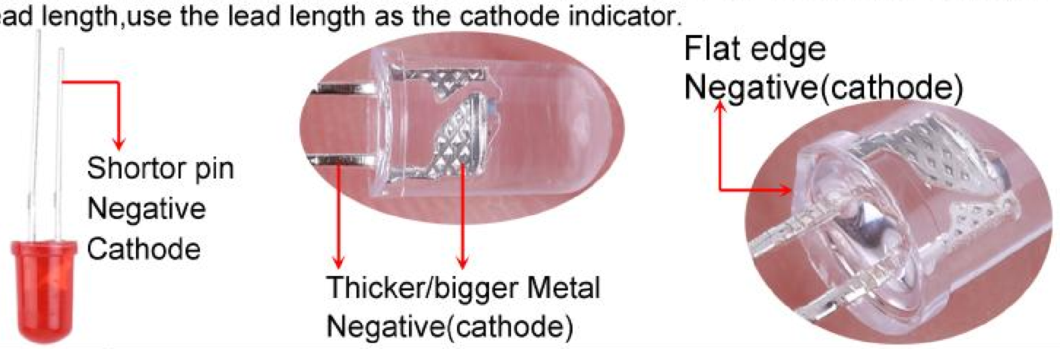
6.1>.According to the length of the LED lead to distinguish. The longer pin is positive(anode) lead. The shorter pin is negative(cathode) lead.

6.2>.Identify the negative(cathode) of the LED is to look into the plastic case where one can see that the negative(cathode) is much thicker/bigger inside the plastic case than the anode lead.

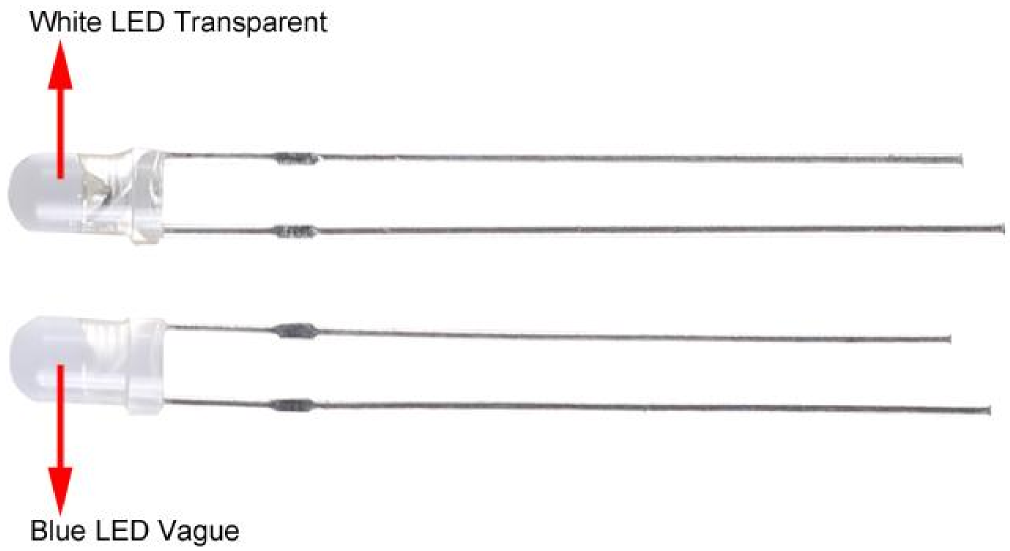
6.3>.Identify by edge of plastic case.The negative(cathode) lead of the LED should be the pin nearest the flat on the plastic case.

6.4>.Test by 3V battery or multimeter.The pin is positive(anode) lead which has connect to positive of 3V if LED can light up after connect 3V power supply.
(LED can not be powered directly from 3V for a short time:less then 0.5second)

6.5>.Note:If the flat on package disagrees with other indicators(short lead,large cathode lead end), then other indicators take priority. I.e. if the flat disagrees with the lead length,use the lead length as the cathode indicator.

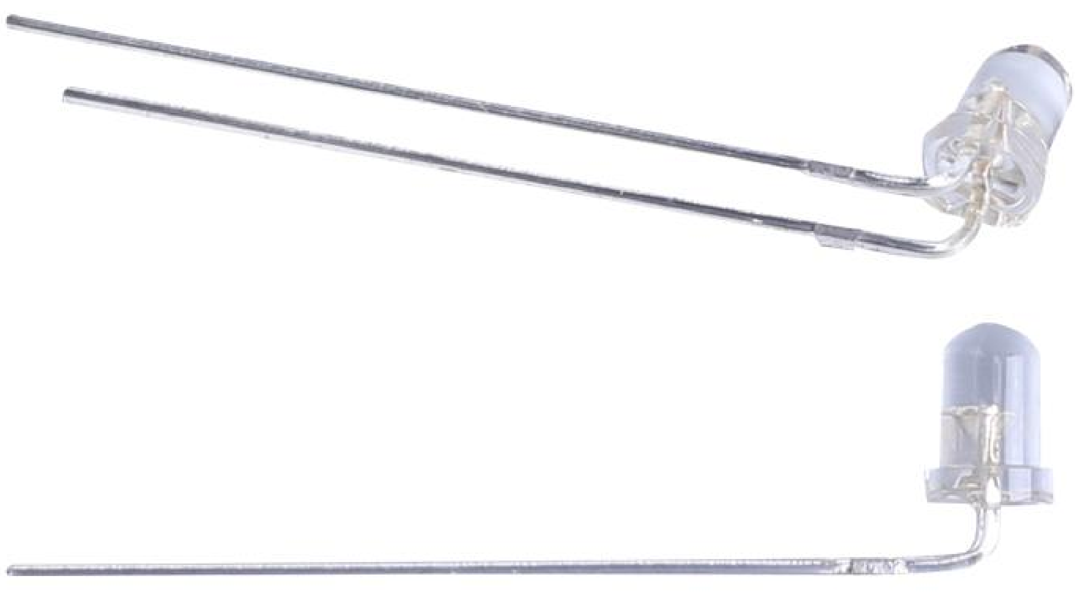


Step 7: Distinguish between white and blue LED by appearance color as showing.



Step 8: The pins of Transparent White LED should be bent to a 90-degree angle, taking care to note the bending point and direction. It is important to pay attention to the direction in which the pins are bent to ensure proper functionality.

Just Bend for Transparent White LED.



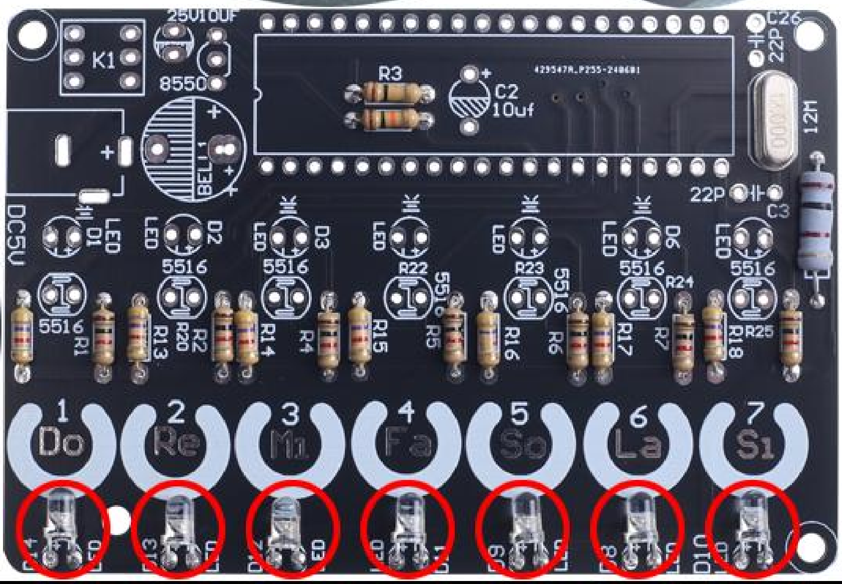
Step 9: Install 7pcs 3mm Bent Transparent White LED at D8-D14 in horizontal.

The longer pin is positive pole and connect to ‘ + ’ pad.



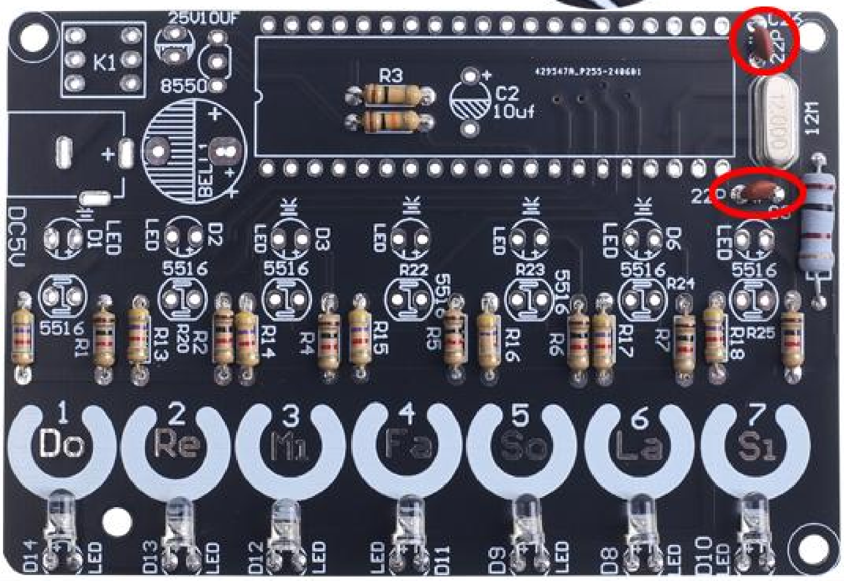




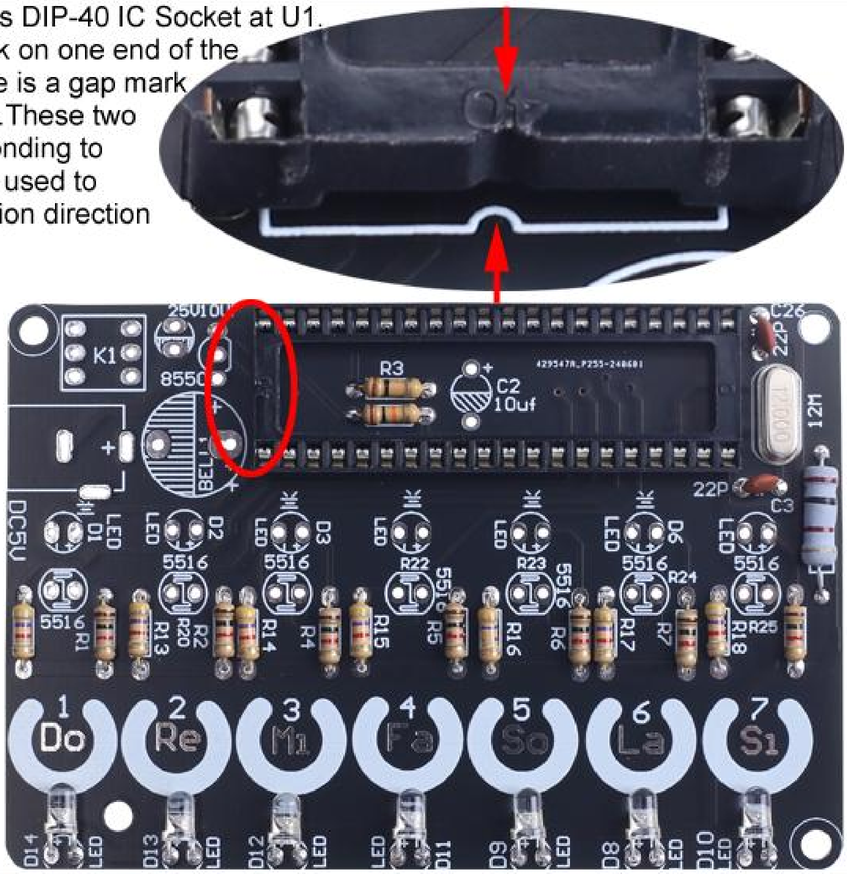


Step 10: Install 2pcs 22pF Ceramic Capacitor at C3,C26.



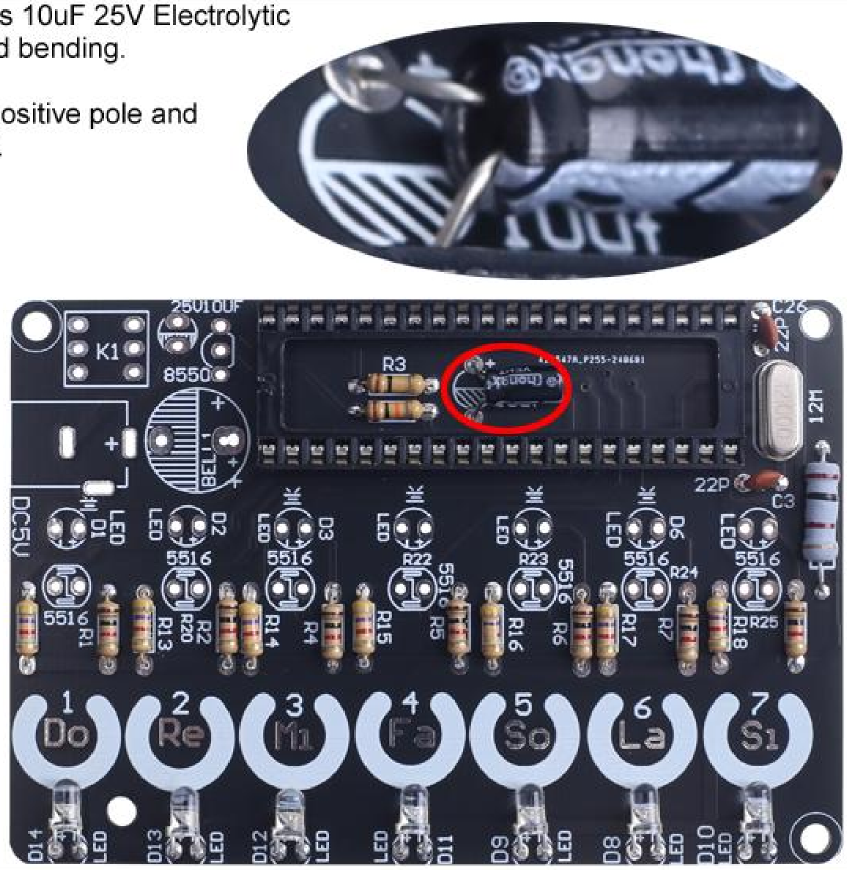


Step 11: Install 1pcs DIP-40 IC Socket at U1. There is a gap mark on one end of the IC Socket and there is a gap mark on PCB silk screen.These two marks are corresponding to each other and are used to specify the installation direction of the IC Socket.

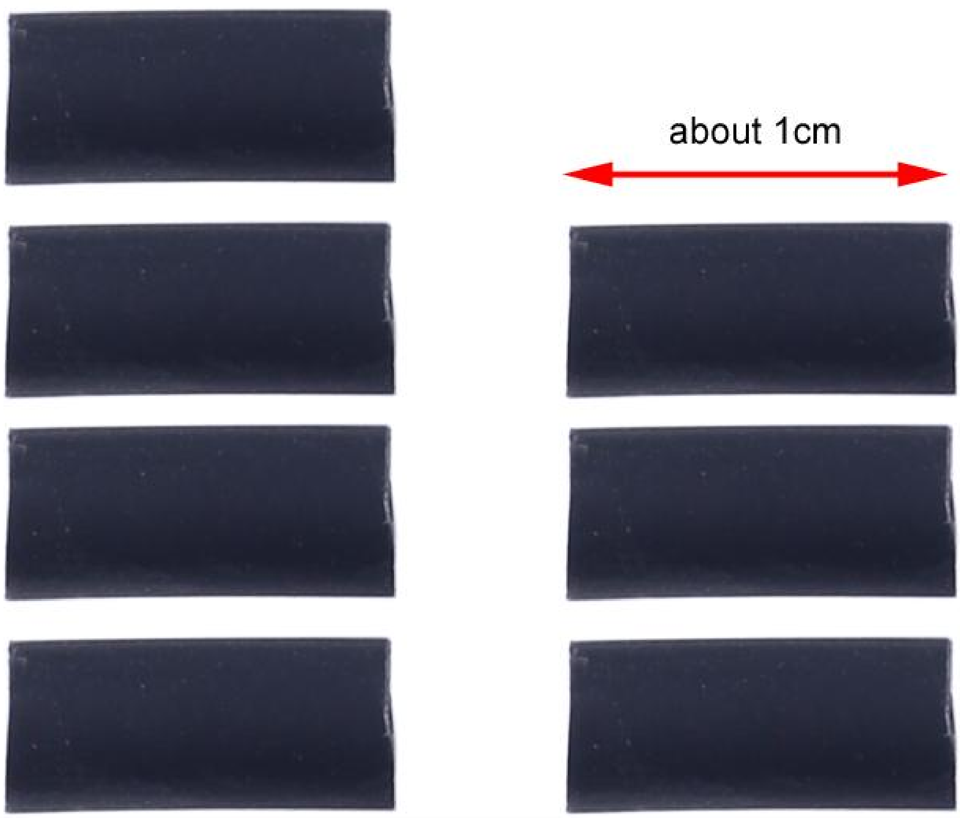


Step 12: Install 1pcs 10uF 25V Electrolytic Capacitor at C2 and bending.

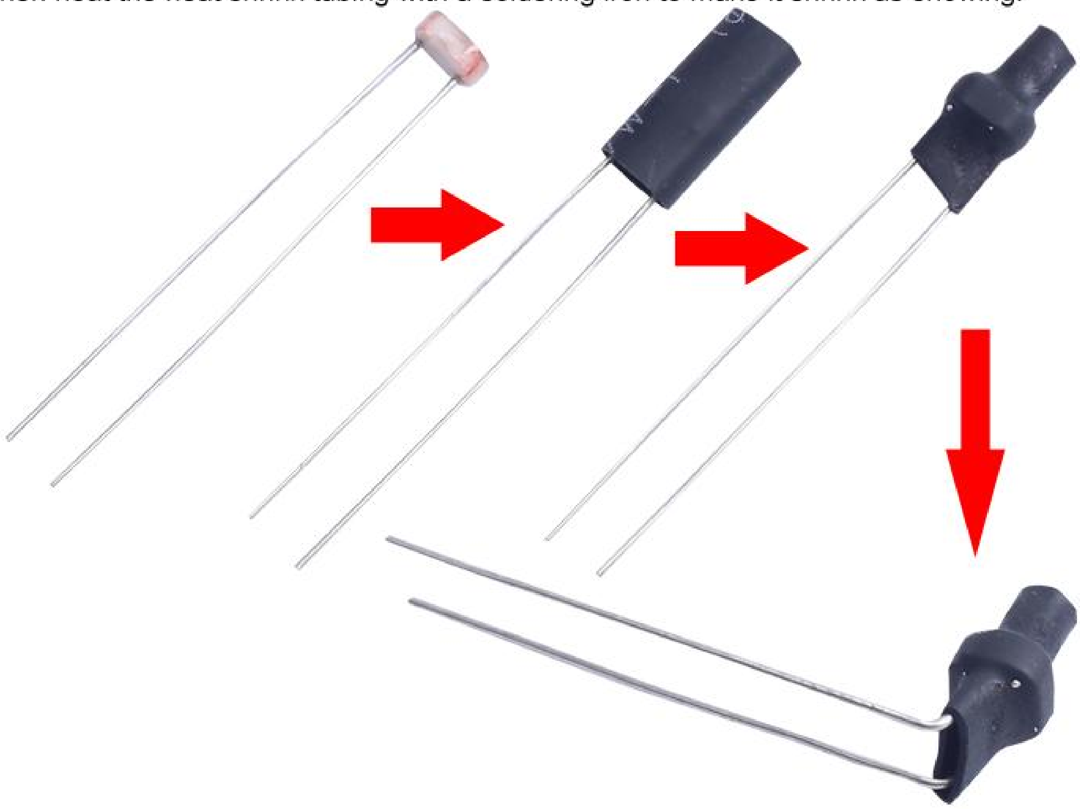
The Longer pin is positive pole and connect to ‘ + ’ pad.



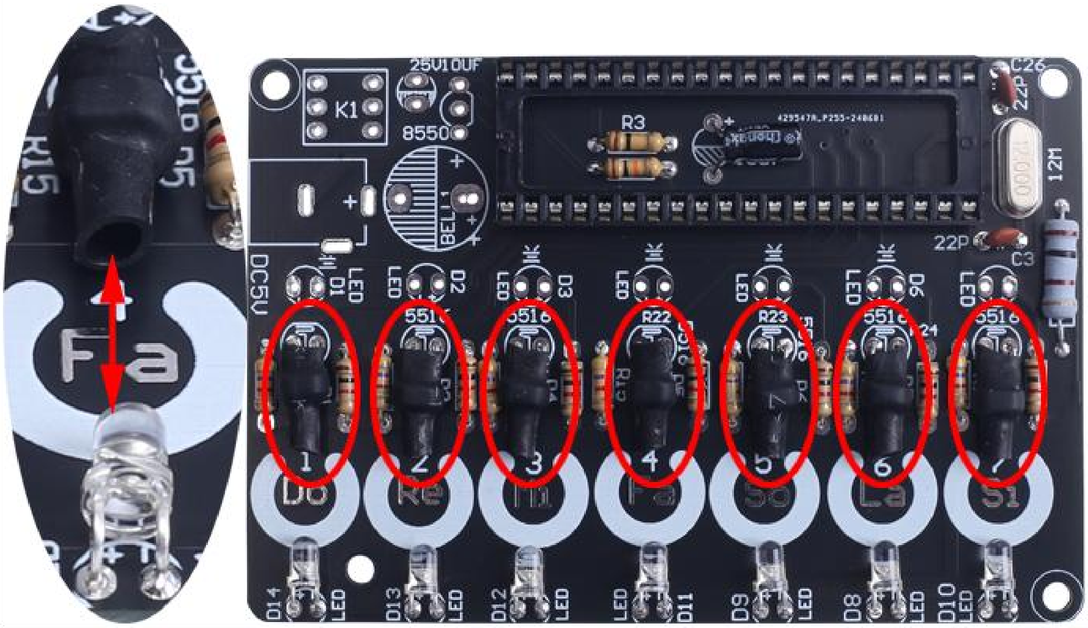
Step 13: Cut 7pcs 1cm Heat Shrink Tubing from 15cm Heat Shrink Tubing as showing.



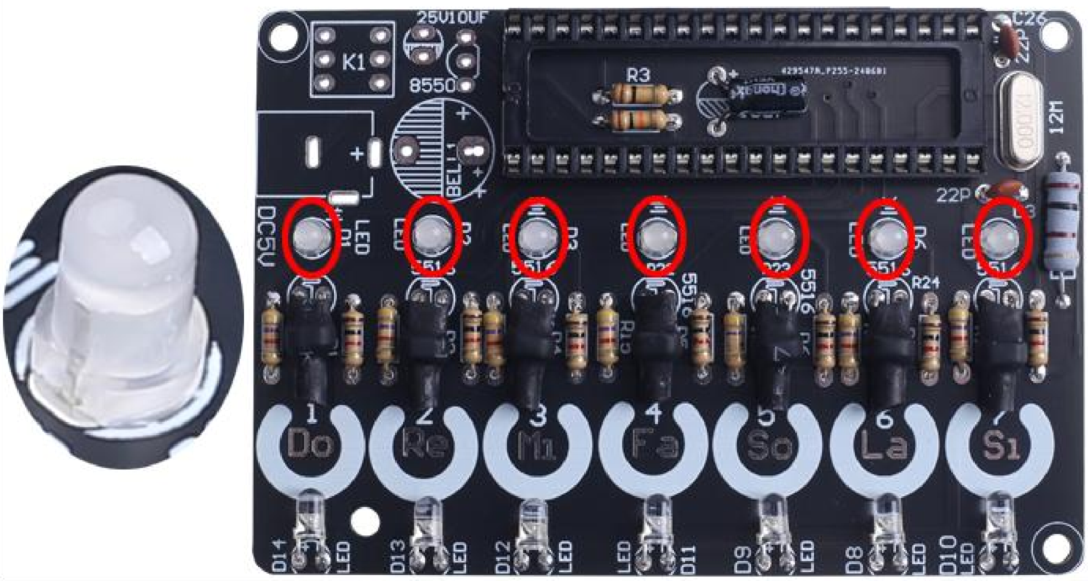
Step 14: Cover 7pcs GL5516 photosensitive sensor with 7pcs 1cm heat shrink tubing then heat the heat shrink tubing with a soldering iron to make it shrink as showing.



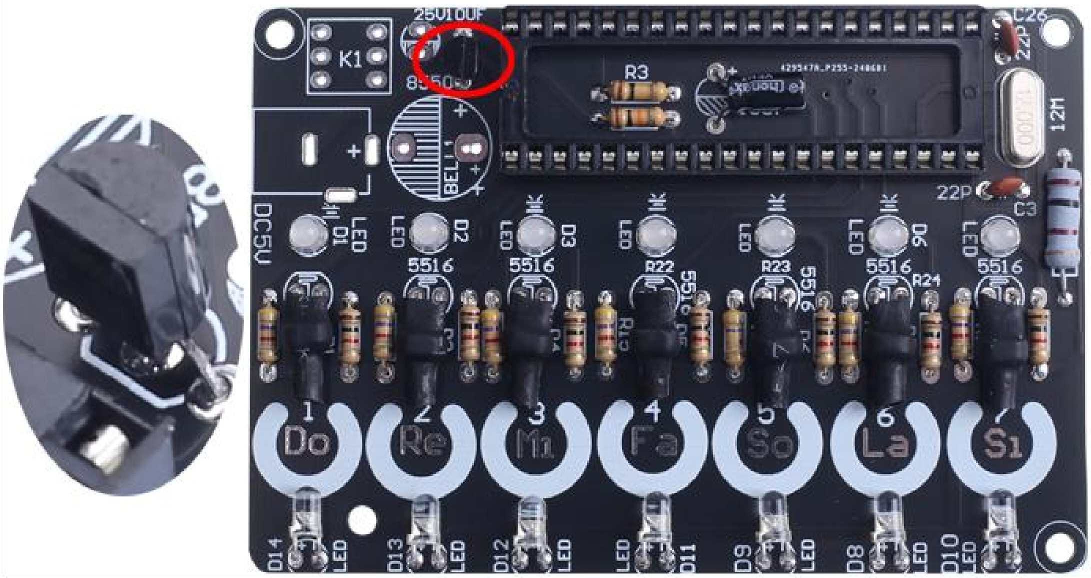
Step 15: Install 7pcs GL5516 photosensitive sensor at R19-R25 in horizontal.
Note: sensor and transparent white LED are aligned with each other.



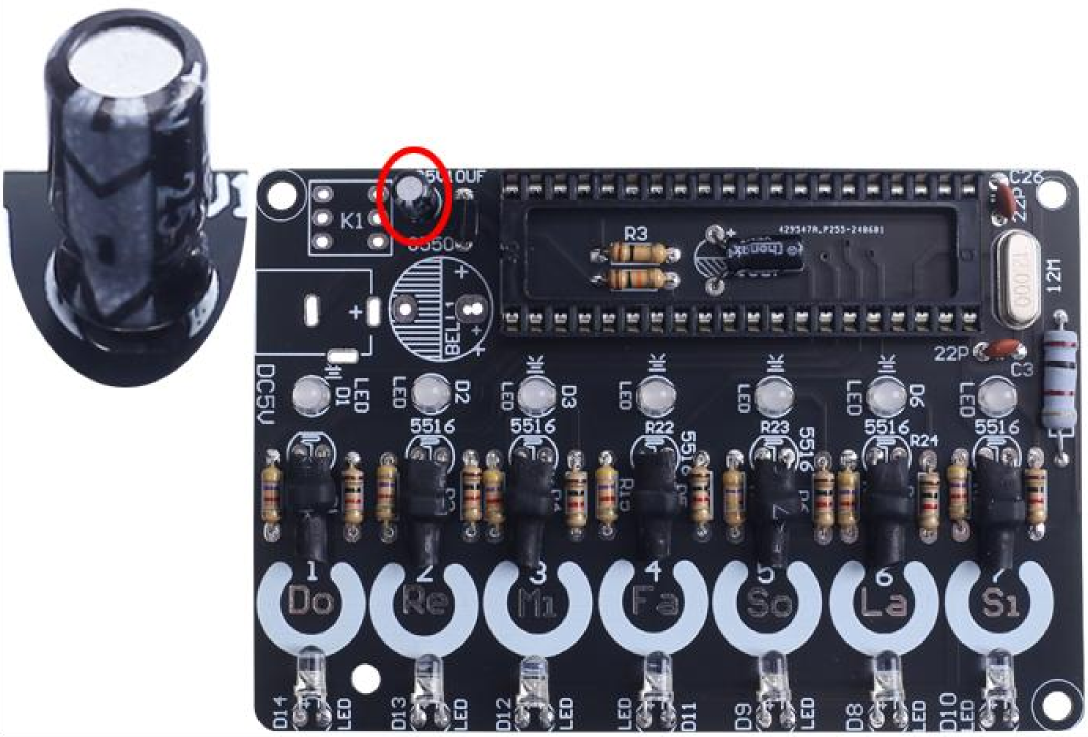
Step 16: Install 7pcs 3mm Vague Blue LED at D1-D7.
The longer pin is positive pole and connect to ‘ + ’ pad.



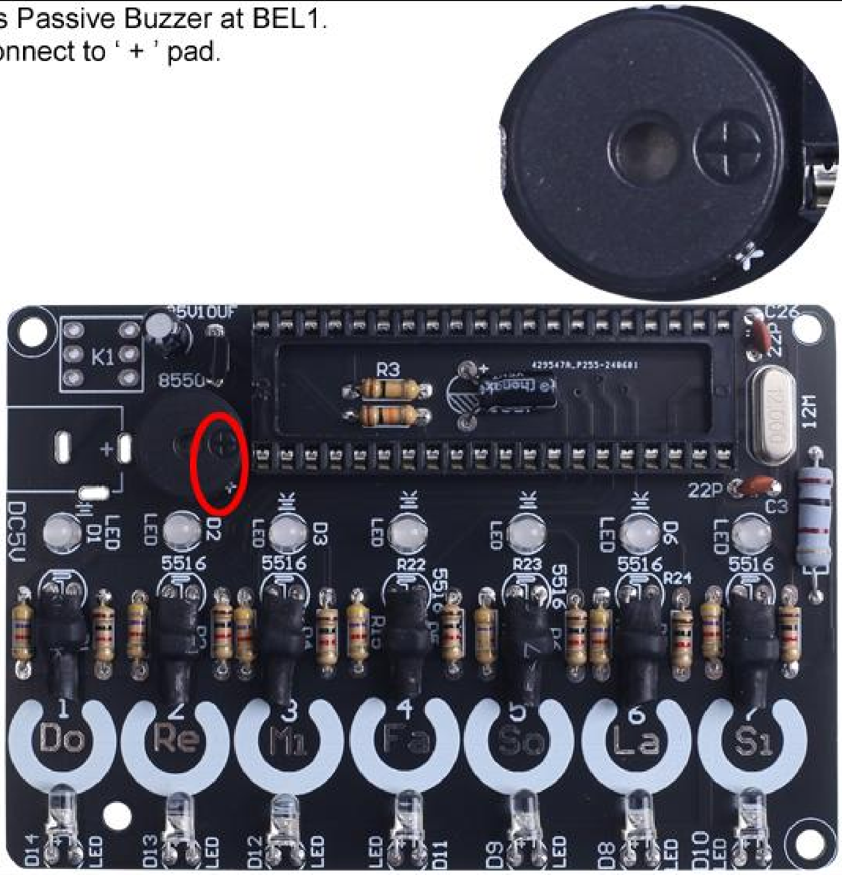
Step 17: Install 1pcs TO-92 S8550 Transistor at Q1. Pay attention to the installation direction. The arc on the PCB corresponds to the arc of the components.



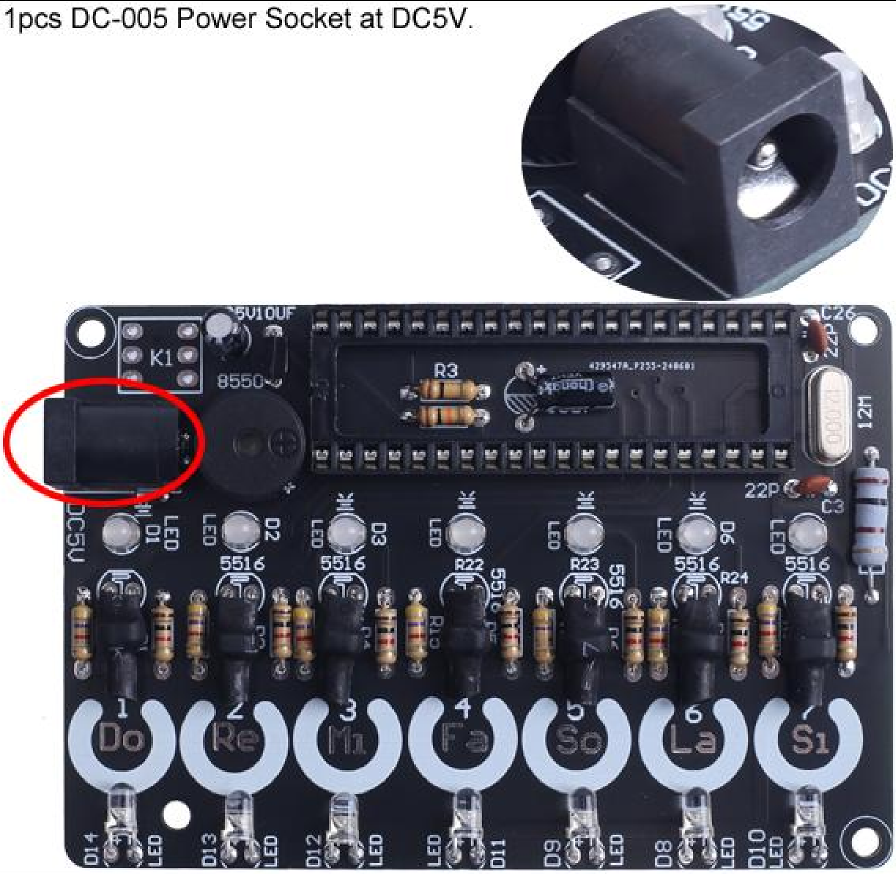
Step 18: Install 1pcs 10uF 25V Electrolytic Capacitor at C1.
The Longer pin is positive pole and connect to ' + ' pad.



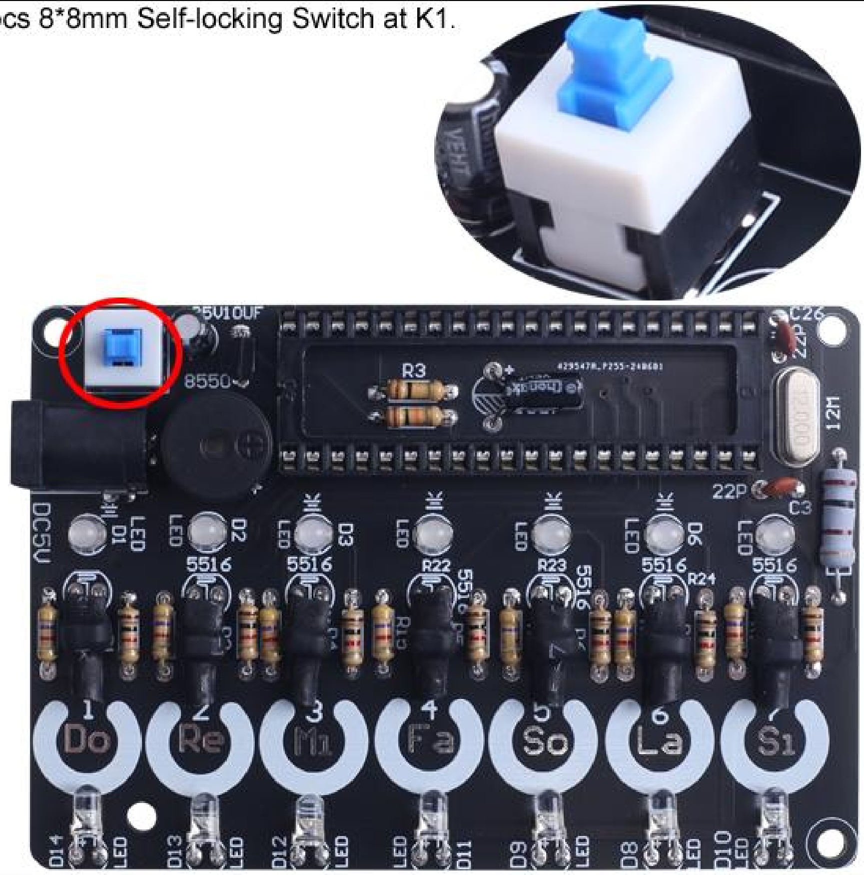
Step 19: Install 1pcs Passive Buzzer at BEL1.
The positive pole connect to ‘ + ’ pad.



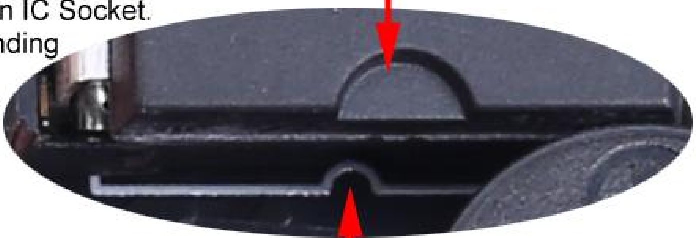
Step 20: Install 1pcs DC-005 Power Socket at DC5V.

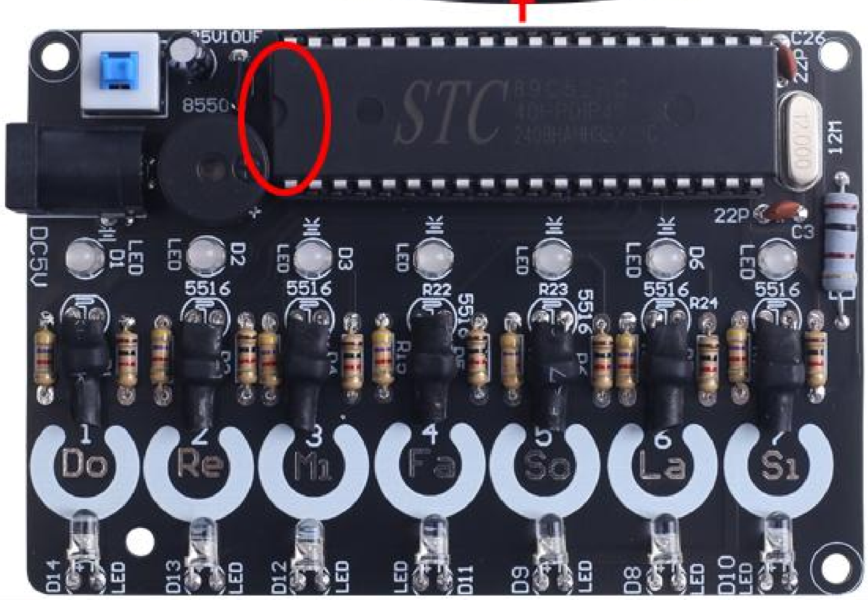


Step 21: Install 1pcs 8*8mm Self-locking Switch at K1.



Step 22: Install 1pcs DIP-40 STC89C52 Controller at U1. There is a gap mark on one end of the IC and a gap mark on IC Socket. These two marks are corresponding to each other and are used to specify the installation direction of the IC.

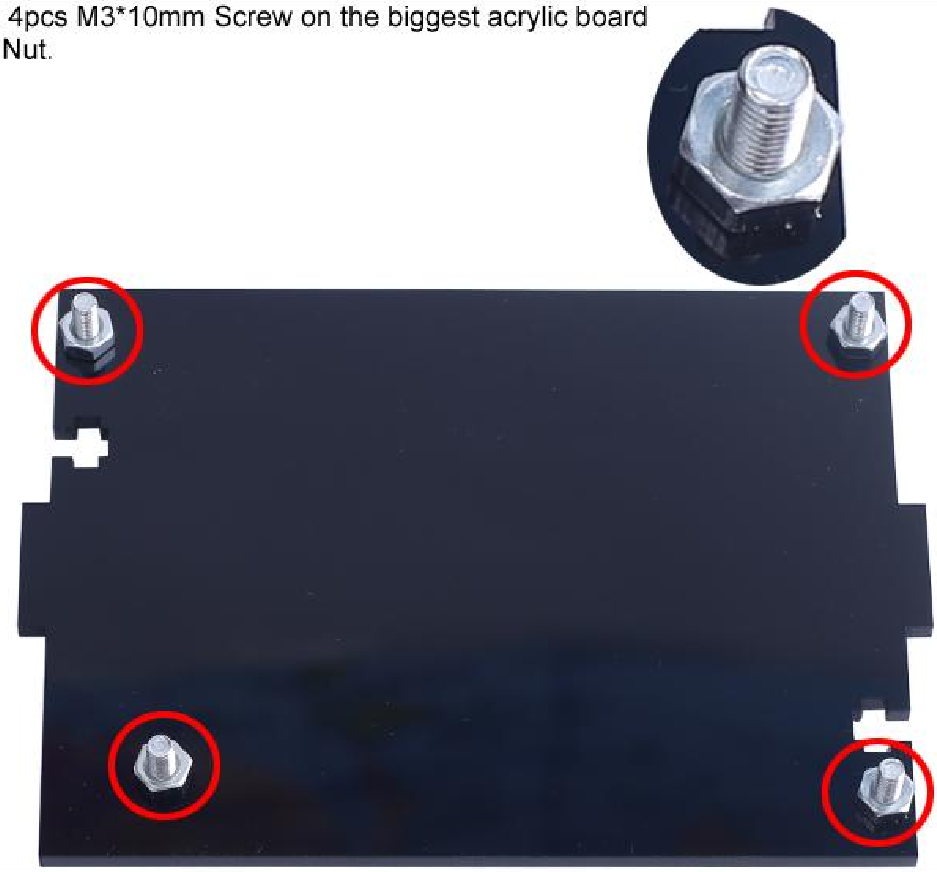




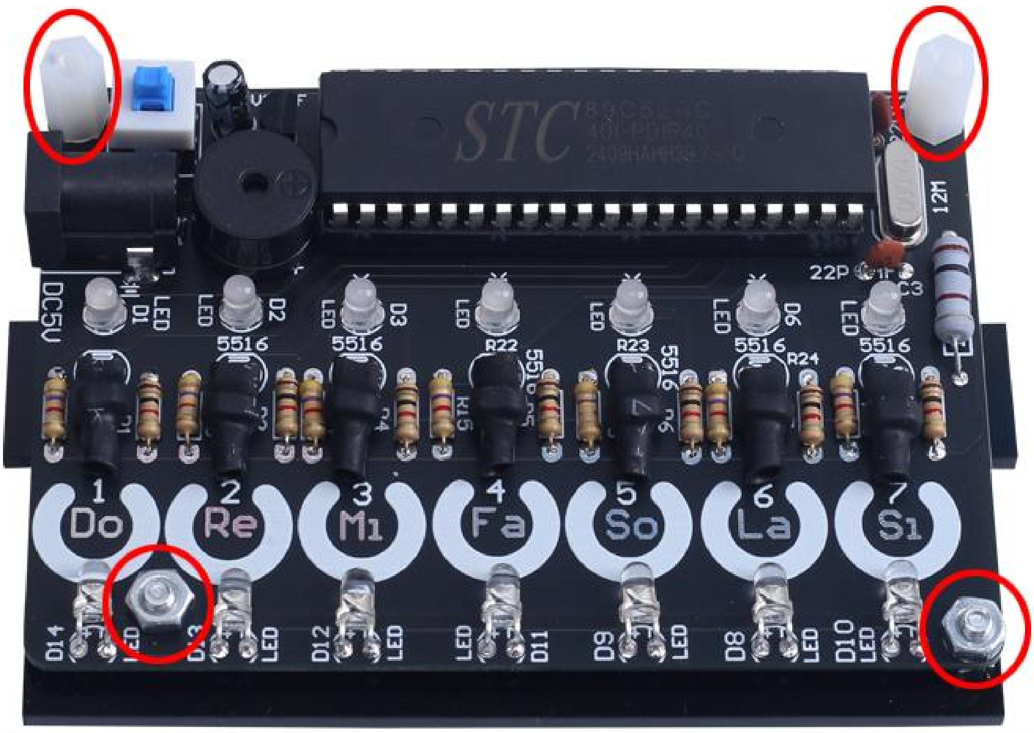
Step 23: Tear off the protective film on the surface of the acrylic board.



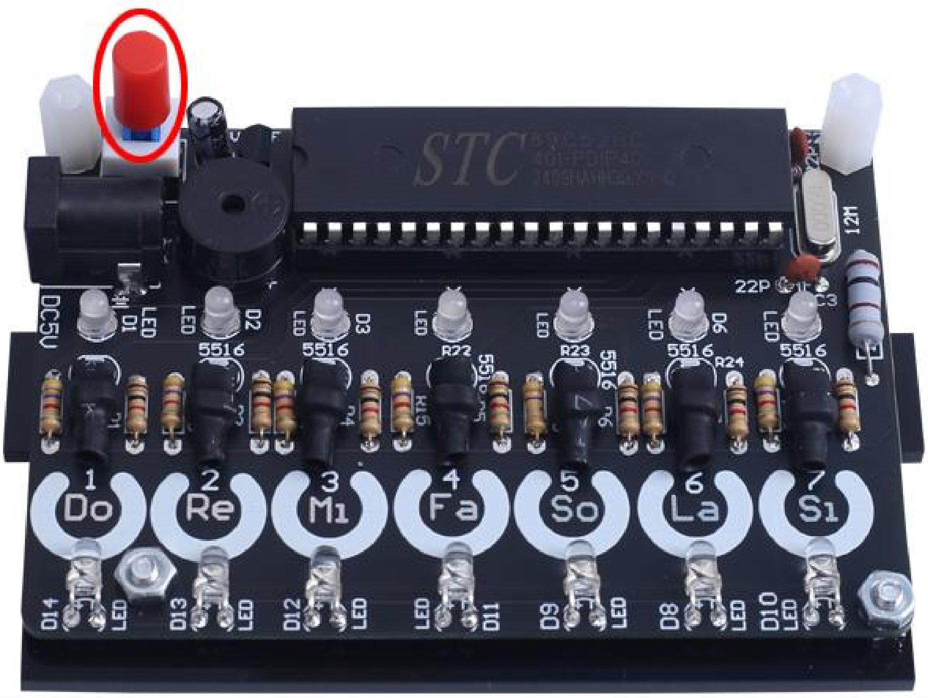
Step 24: Fix 4pcs M3*10mm Screw on the biggest acrylic board by 4pcs M3 Nut.



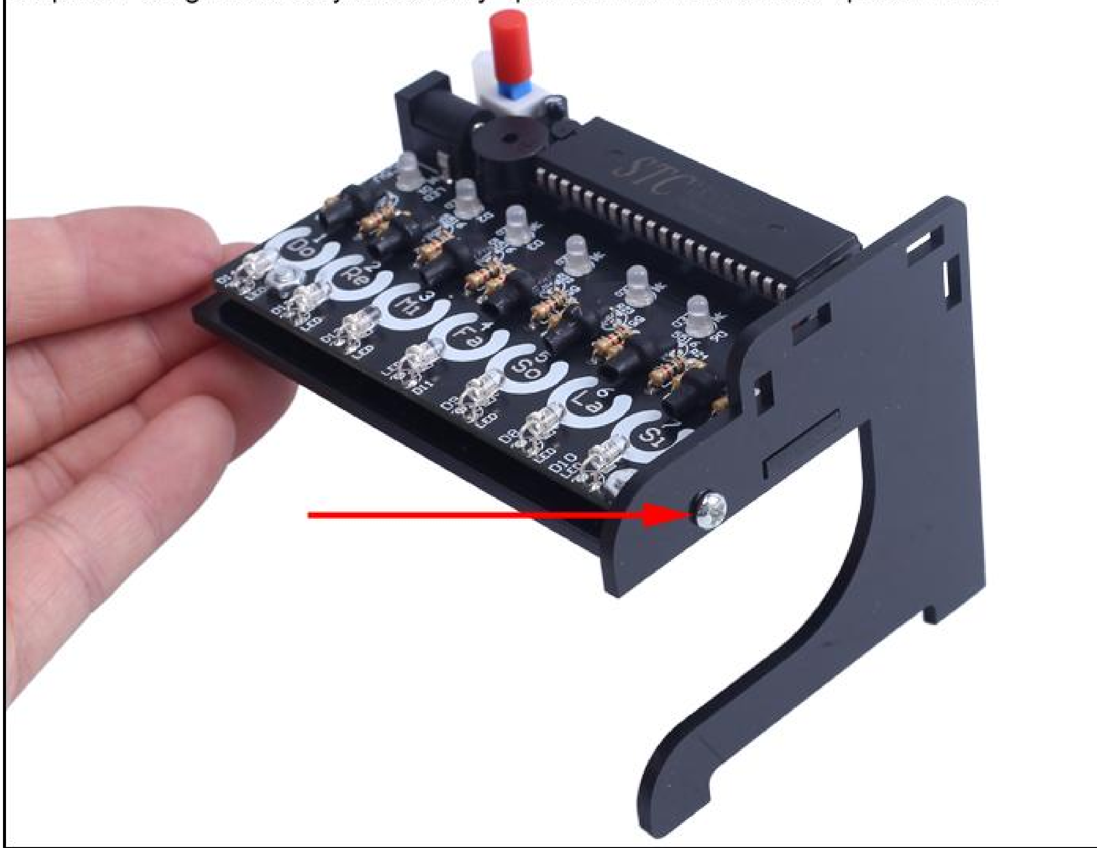
Step 25: Fix PCB by 2pcs M3*10mm Nylon Pillar and 2pcs M3 Nut as showing.



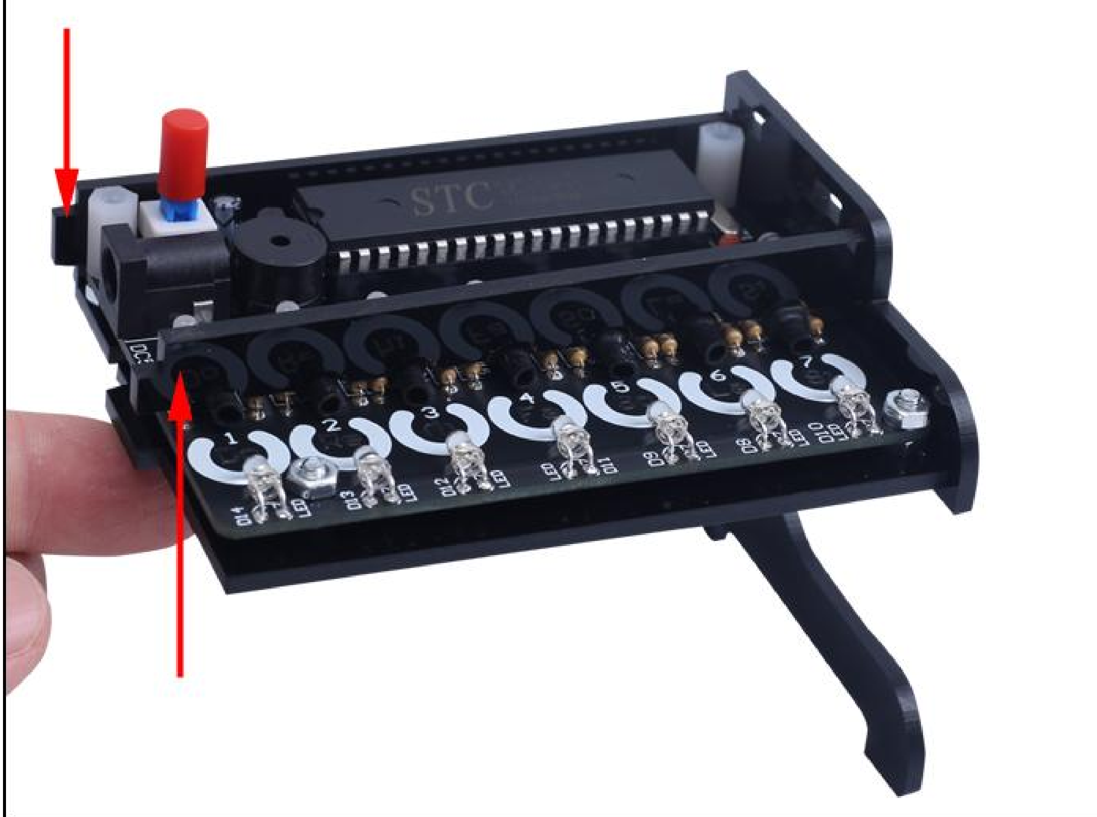
Step 26: Install Red Button Cap on 8*8mm Self-locking Switch at K1.



Step 27: Fix right side acrylic board by 1pcs M3*8mm Screw and 1pcs M3 Nut.



Step 28: Install 2pcs smaller acrylic board as showing.



Step 29: Fix top acrylic board on Nylon Pillar by 2pcs M3*8mm Screw.



Step 30: Fix left side acrylic board by 1pcs M3*8mm Screw and 1pcs M3 Nut.

